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WOOD ANATOMY OF THE NEOTROPICAL SAPOTACEAE. XVIII. GOMPHILUMA. (U)

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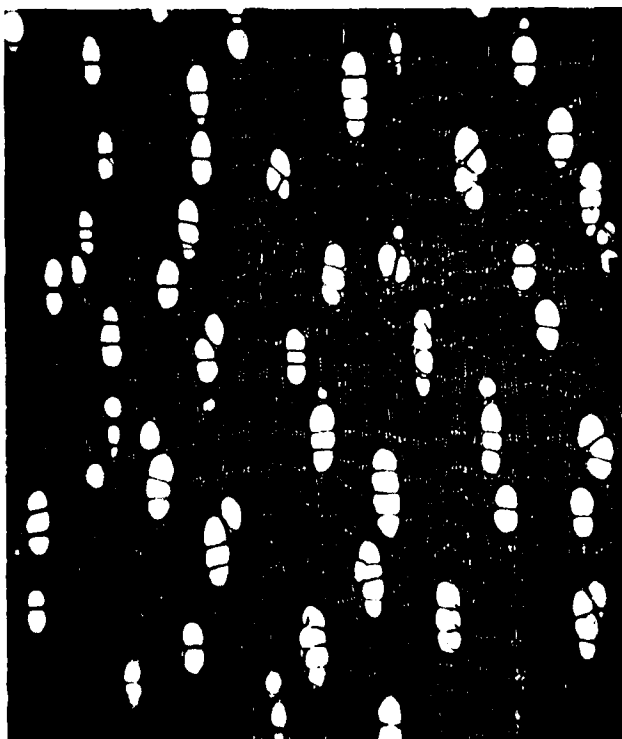
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**WOOD ANATOMY
OF THE
NEOTROPICAL SAPOTACEAE
XVIII. GOMPHILUMA**

RESEARCH PAPER FPL 362

FOREST PRODUCTS LABORATORY
FOREST SERVICE
U.S. DEPARTMENT OF AGRICULTURE
MADISON, WIS.

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Abstract

As now constituted, Gomphiluma consists of two species of small trees limited to the Brazilian Amazon. Formerly submerged in the large genus Pouteria, Gomphiluma was reinstated to generic status by Aubréville in 1961. The pale brown wood of moderate density is quite unlike that of Pouteria and appears more nearly allied with certain species of Micropholis.

Preface

The Sapotaceae form an important part of the ecosystem in the neotropics; for example, limited inventories made in the Amazon Basin indicate that this family makes up about 25 percent of the standing timber volume there. This would represent an astronomical volume of timber but at present only a very small fraction is being utilized. Obviously, better information would help utilization--especially if that information can result in clear identification of species.

The Sapotaceae represent a well-marked and natural family but the homogeneous nature of their floral characters makes generic identification extremely difficult. This in turn is responsible for the extensive synonymy. Unfortunately, species continue to be named on the basis of flowering or fruiting material alone and this continues to add to the already confused state of affairs.

This paper on Gomphiluma is the eighteenth in a series describing the anatomy of the secondary xylem of the neotropical Sapotaceae. The earlier papers, all by the same author and under the same general heading, include:

- | | |
|--|---------------------------------------|
| I. Bumelia--Res. Pap. FPL 325 | X. Micropholis--Res. Pap. FPL 351 |
| II. Mastichodendron--Res. Pap. FPL 326 | XI. Prieurella--Res. Pap. FPL 352 |
| III. Dipholis--Res. Pap. FPL 327 | XII. Neoxythece--Res. Pap. FPL 354 |
| IV. Achrouteria--Res. Pap. FPL 328 | XIII. Podoluma--Res. Pap. FPL 358 |
| V. Calocarpum--Res. Pap. FPL 329 | XIV. Elaeoluma--Res. Pap. FPL 359 |
| VI. Chloroluma--Res. Pap. FPL 330 | XV. Sandwithiodoxa--Res. Pap. FPL 360 |
| VII. Chrysophyllum--Res. Pap. FPL 331 | XVI. Paralabatia--Res. Pap. FPL 360 |
| VIII. Diploon--Res. Pap. FPL 349 | XVII. Gambeya--Res. Pap. FPL 361 |
| IX. Pseudoxythece--Res. Pap. FPL 350 | |

Publication in this manner will afford interested anatomists and taxonomists the time to make known their opinions and all such information is hereby solicited. At the termination of this series the data will be assembled into a single comprehensive unit.

WOOD ANATOMY OF THE NEOTROPICAL SAPOTACEAE

XVIII. GOMPHILUMA

By

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Introduction

Gomphiluma was described by Baillon in 1891 and consisted of the single species G. martiana Baill. This was found to be synonymous with the earlier published Lucuma gomphiifolia Mart., and eventually was transferred to the all-inclusive Pouteria as P. gomphiifolia (Mart.) Radlk. Aubréville reinstated Gomphiluma in 1961 making the new combination G. gomphiifolia (Mart.) Aubr. A second species, G. attenuata, was named by Gilly but it is not known at this time whether this was validly published.

Gomphiluma with its two species of small trees is apparently confined to the Brazilian Amazon.

Anatomically the wood is quite unlike that of Pouteria (sensu Aubréville) but appears more nearly allied with those species of Micropholis with very small intervessel pitting. The primary difference is with respect to the vascular tracheids, lacking in Micropholis and present in Gomphiluma. These two genera also differ with regard to the pitting of the erect cells of the wood ray margins: fine and uniform in Gomphiluma but prominent and frequently disjunctive in Micropholis.

Description

Based on three specimens of G. attenuata Gilly (Froes 22, 269, 277) and three specimens of G. gomphiifolia (Mart.) Aubr. (Froes 191, 258, and Pires 14400). All specimens are from the Brazilian Amazon.

^{1/} Pioneer Research Unit, Forest Products Laboratory.

^{2/} Maintained at Madison, Wis., in cooperation with the University of Wisconsin.

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General: Wood light brown; moderately heavy with an average specific gravity of 0.69 (range 0.60 to 0.76). Growth rings faint; defined by very narrow bands of flattened wood fibers and associated parenchyma. Parenchyma banded, more or less distinct with a hand lens.

Anatomical:

Pores essentially diffuse in gomphiifolia and with a distinct tendency toward echelon arrangement in attenuata. Pores mostly in radial multiples of 2 to 4 in both species but occasionally to 5 in attenuata. Maximum pore diameter of 87 μm to 110 μm in attenuata; 126 μm to 173 μm in gomphiifolia. This is the most obvious difference between the two species (figs. 1 and 3).

Vessel member length average of 550 μm in gomphiifolia and 730 μm in attenuata. Perforation simple. Intervessel pits very small, 4 μm in diameter. Tyloses thin-walled and occasionally thick-walled to sclerotic.

Axial parenchyma essentially banded but not always clearly defined. The individual bands 1-2(3) seriate and occasionally discontinuous (figs. 2 and 4). Cells with light brown contents. Silica particles infrequent.

Wood rays commonly 1-2 seriate in attenuata and 1-3 seriate in gomphiifolia; heterocellular. Maximum height of 2-3 seriate rays varies from 173 μm to 394 μm . Light brown contents common, associated with silica particles attaining diameters of 10 μm to 16 μm . Vessel-ray pitting irregular in shape and size; commonly linear.

Wood fibers moderately thick-walled. Fiber length averages of individual specimens range from 0.99 μm to 1.48 μm ; average 1.08 in gomphiifolia and 1.25 in attenuata. Vascular tracheids common.

Silica content: attenuata 1.06 percent (Froes 277); gomphiifolia, 1.30 percent (Froes 258).

Diagnostic features: Wood light brown; density moderate (average specific gravity 0.69); intervessel pitting 4 μm diameter; silica particles small (up to 16 μm); vascular tracheids common. Similar to some of the Micropholis species with an intervessel pit diameter of 4 μm , but these woods are generally heavier and, moreover, are without vascular tracheids.

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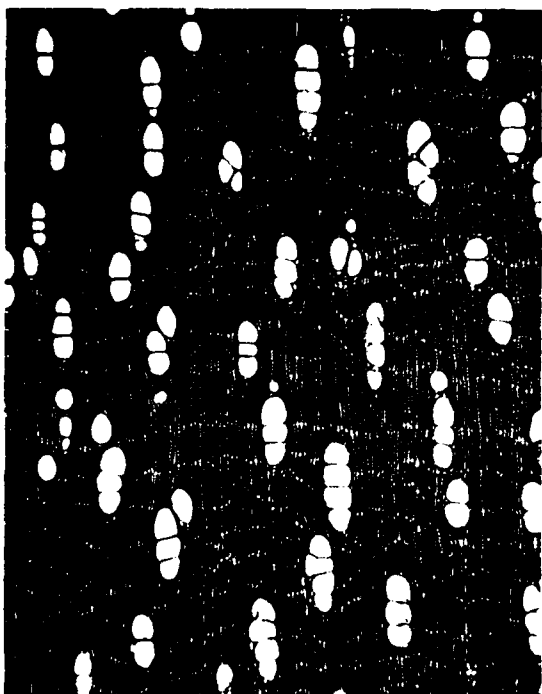


Figure 1.--Gomphiluma gomphiifolia showing general dispositions of pores, parenchyma, and faint growth rings. (Froes 258) X 30.

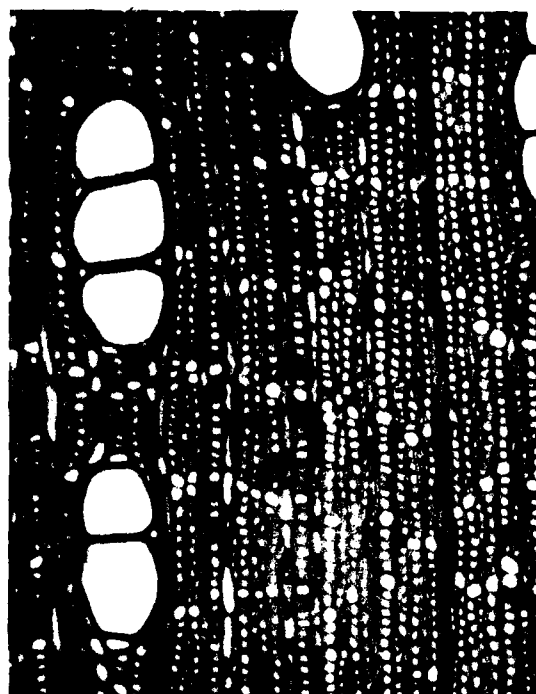


Figure 2.--G. gomphiiluma showing parenchyma detail (Froes 258) X 110.

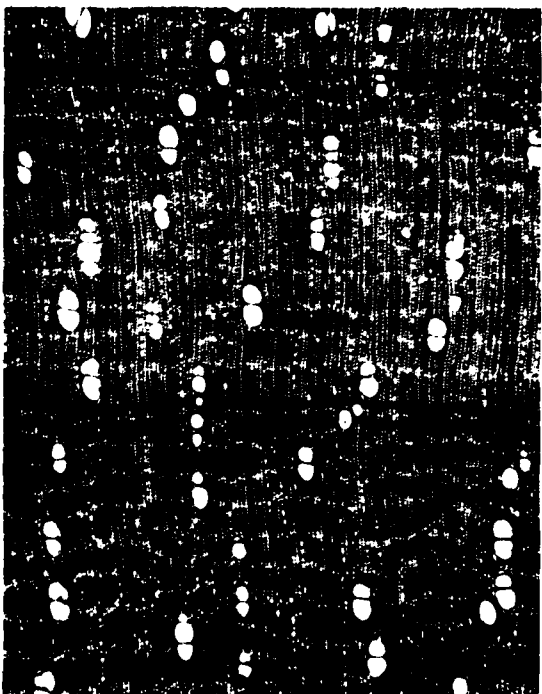


Figure 3.--G. attenuata showing smaller pores with tendency toward echelon arrangement and more distinct growth rings (Froes 277) X 30.

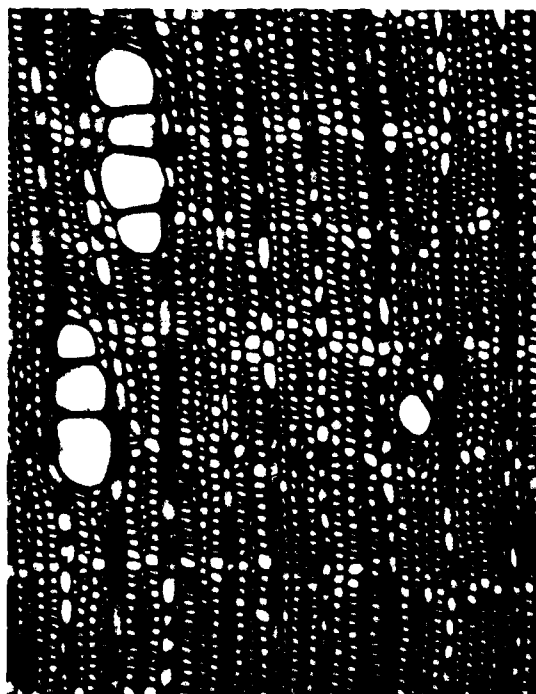


Figure 4.--G. attenuata showing parenchyma detail (Froes 277) X 110.